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Three Species of Gammaridean Amphipod (Crustacea) from Korean Waters

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한국 해산 옆새우류(갑각상강, 단각목) 3종

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적 요

한국 미기록인 해산 옆새우류 3종, *Atylus collingi* (Gurjanova), *Cerapus longirostris* Shen과, *Pereionotus holmesi* (Gurjanova)을 기재한다.

Key words: Amphipoda, Description, Korea.

INTRODUCTION

The species of gammaridean amphipods have been collected from various habitats along the coast of Korea (Kim and Kim, 1988). Three species that had not been previously reported from Korean waters were collected from three localities. This paper provides redescriptions of these amphipod species. Materials are deposited in the Department of Molecular Biology, Seoul National University.

DESCRIPTION

Family Dexaminidae Leach, 1814

Genus *Atylus* Leach, 1815

1. *Atylus collingi* (Gurjanova, 1938)

(Figs. 1, 2)

Nototropis collingi Gurjanova, 1938(p. 328, fig. 38); 1951(p. 688, fig. 476).

Atylus collingi: Barnard, 1958(p. 30).

Material examined: 25 ♂♂, 6 ♀♀, Kōjin, Feb. 17, 1986(C.B.Kim).

Description: Head (Fig. 1A) with rather long rostrum, rostrum reaching to middle part of peduncular article 1 of antenna 1; lateral cephalic lobes slightly sinuous; eye black and moderate in size.

Antenna 1 (Fig. 1A) shorter than antenna 2, reaching to distal margin of peduncular article 5 of antenna 2; peduncular article 1 longer than article 2, with ventral margin pointed distally; flagellum composed of about 12 segments. Antenna 2 with flagellum shorter than peduncular articles 1-5 combined; flagellum composed of 7 segments.

Coxa 1 (Fig. 1B) produced antero-ventrally; palm of gnathopod 1 oblique, lined with setae; article 6 with 3 rows of spines on ventral margin distally. Coxa 2 (Fig. 1C) rectangular in shape; palm of gnathopod 2 oblique; article 6 with 3 rows of spines on ventral margin distally. Coxae 3-4 (Fig. 1A, B) rectangular in shape; ventral margin of coxa 4 concave.

Article 2 of pereopod 5 (Fig. 2C) narrow distally, not produced at ventrodistal corner; article 5 much shorter than article 6. Article 2 of pereopod 6 (Fig. 2D) with concave ventrodistal corner, and ventral margin lined with spines; article 5 shorter than article 6. Article 2 of pereopod 7 (Fig. 2E) produced into broad projection which far over reaching distal end of article 3, and terminal part of this projection round; article 5 shorter than article 6.

Each of pereonites 6-7 with 1 tooth on dorsal margin distally. Each of pleonites 1-3 with 1 tooth on dorsal margin distally. Each of pleonal epimera 1-3 with lateral ridge; anterior margin of pleonal epimeron 1 with setae densely, and ventral margin with spines; pleonal epimeron 2 rectangular in shape, with 1 spine at posterodistal corner, and with spines on ventral and posterior margins, and posterior margin slightly concave; pleonal epimeron 3 with 1 spine at posterodistal corner, and concave posterior margin.

Posterodistal corner of urosomite 1 (Fig. 1F) produced into 1 tooth preceded by a notch; urosomites 2-3 coalesced, each posterodistal corner of urosomites 2-3 produced into 1 tooth.

Uropod 1 (Fig. 2F) with peduncle longer than rami; rami almost equal in length. Inner ramus of uropod 2 (Fig. 2G) longer than outer one. Rami of uropod 3 (Fig. 2H) almost equal in length, and about 2 times as long as peduncle. Telson (Fig. 2I) triangular in shape, cleft to 80% of telson length, and apex of each lobe with 1 seta on notched part.

Type Locality: Petrov Island (Japan Sea).

Distribution: Korea, Petrov Island.

Family Ischyroceridae Stebbing, 1899

Genus *Cerapus* Say, 1817

2. *Cerapus longirostris* Shen, 1936

(Figs. 3, 4)

Cerapus longirostris Shen, 1936(pp. 265-273, figs. 1 - 5).

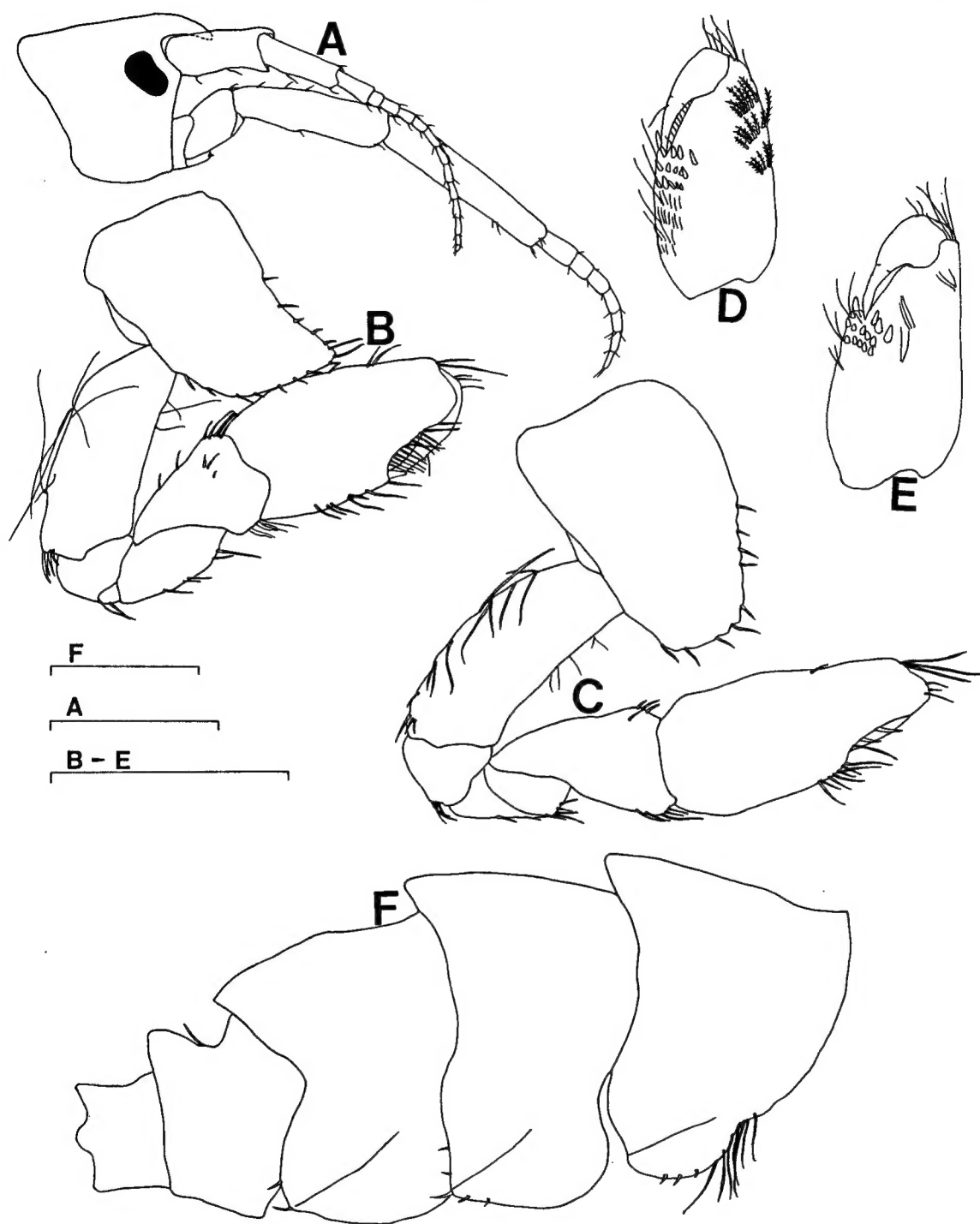


Fig. 1. *Atylus collingi* (Gurjanova). Male (body length: 10mm). A, right part of head and antennae; B, right gnathopod 1; C, right gnathopod 2; D, inner view of article 6 and dactyl of right gnathopod 1; E, inner view of article 6 and dactyl of right gnathopod 2; F, right pleonites and urosomites. Scale bars = 1mm.

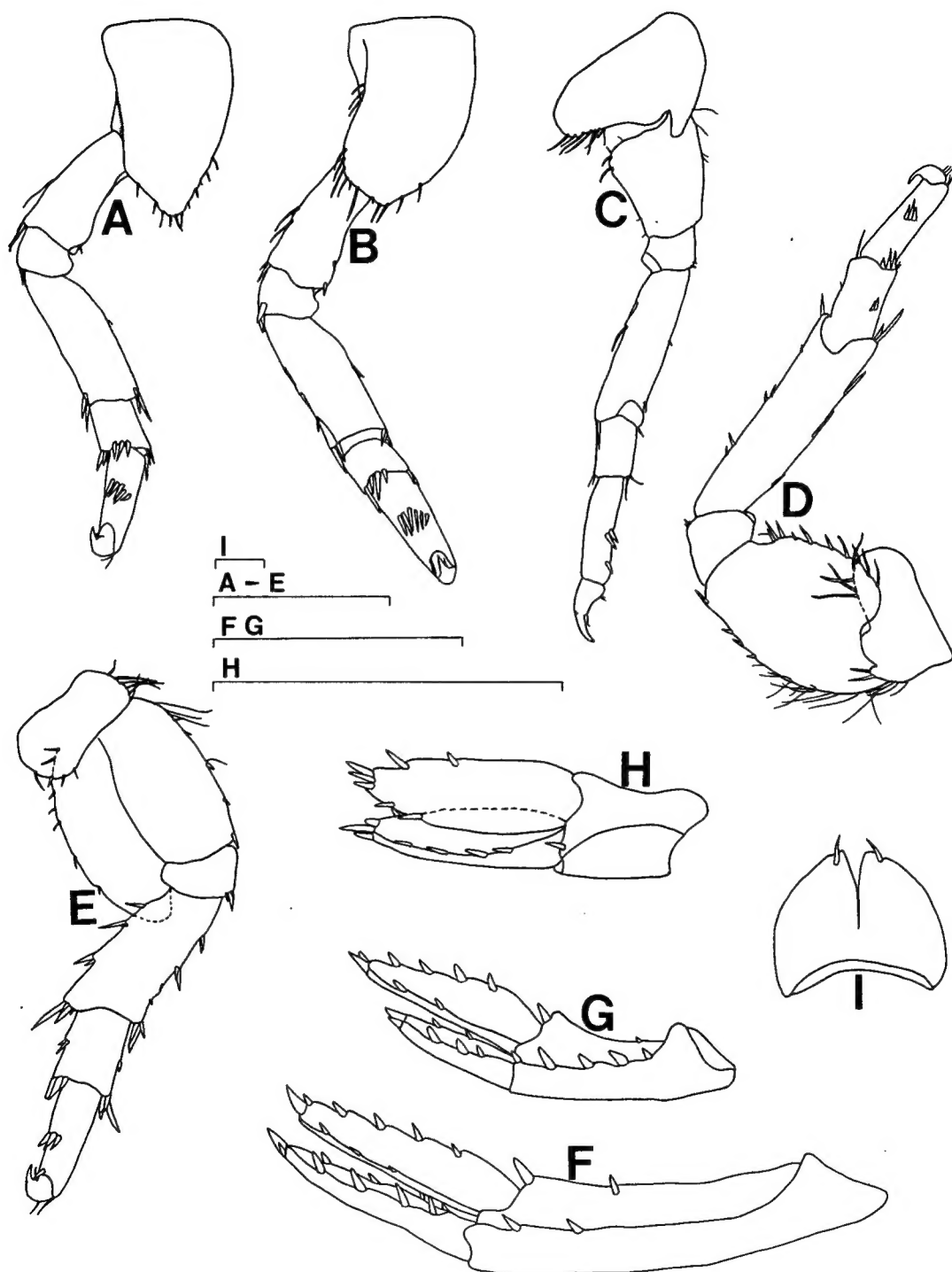


Fig. 2. *Atylus collingi* (Gurjanova). Male (body length: 10mm). A, right pereopod 3; B, right pereopod 4; C, right pereopod 5; D, right pereopod 6; E, right pereopod 7; F, right uropod 1; G, right uropod 2; H, right uropod 3; I, dorsal view of telson. Scale bars: I=0.1mm; A-H=1mm.

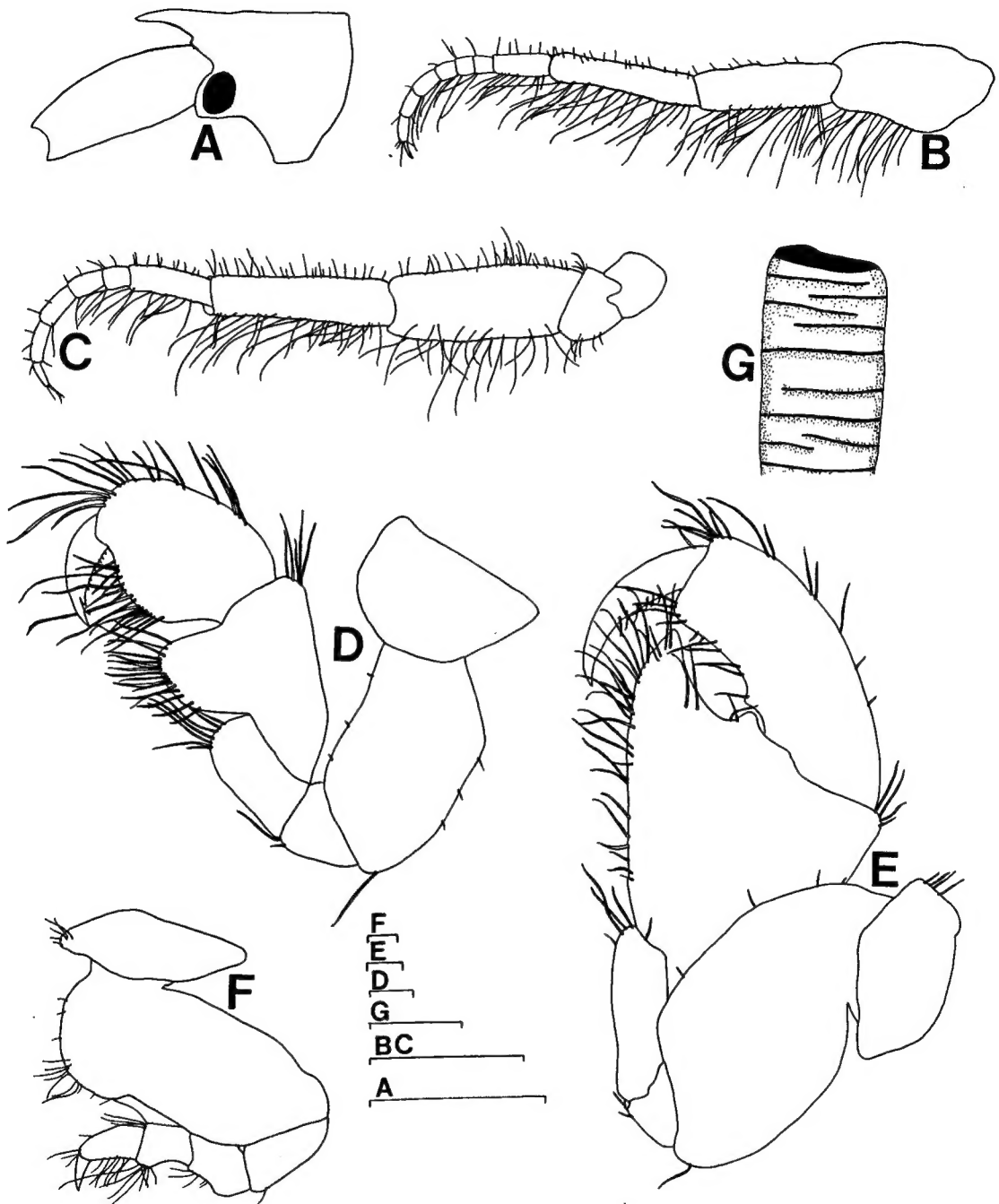


Fig. 3. *Cerapus longirostris* Shen. Male (body length: 9mm). A, left part of head and article 1 of antenna 1; B, lateral view of left antenna 1; C, ventrolateral view of left antenna 2; D, left gnathopod 1; E, left gnathopod 2; F, left pereopod 3; G, distal part of tube in which this species dwell. scale bars: D, E, F = 0.1mm; A-C, G = 1mm.

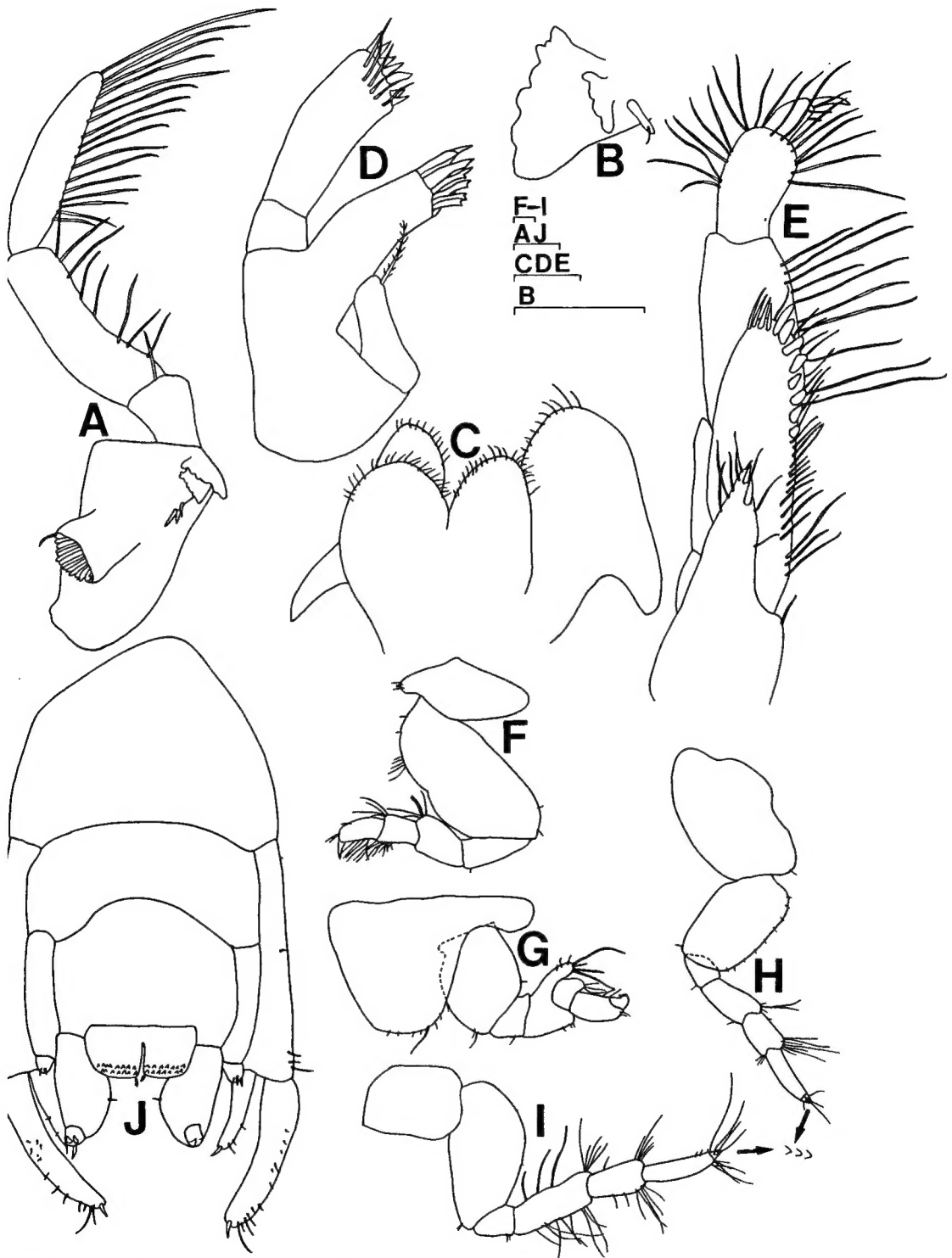


Fig. 4. *Cerapus longirostris* Shen. Male (body length: 9mm). A, inner view of left mandible; B, distal part of right mandible; C, lower lip; D, left maxilla 1; E, left maxilliped; F, left pereopod 4; G, left pereopod 5; H, left pereopod 6; I, left pereopod 7; J, dorsal view of urosomites, uropods, and telson. Scale bars = 0.1mm.

Cerapus tubularis: Barnard, 1962(pp. 61-63) [Not *Cerapus tubularis* Say, 1817].

Cerapus tubularis: Morino, 1976(pp. 180-188, figs. 1B, 3C,D,5B) [Not *Cerapus tubularis* Say, 1817] (in part).

Material examined: 10 ♂♂, Sōsan, May 1987(C.B.Kim).

Description of male: Head (Fig. 3A) with long rostrum, rostrum reaching to proximal 40% of article 1 of antenna 1, each antero-lateral angle of rostrum produced.

Antenna 1 (Fig. 3B) setose ventrally, subequal to antenna 2; peduncular article 1 stout and as long as article 2; peduncular article 3 as long as article 2; flagellum well-developed, 7-segmented. Antenna 2 (Fig. 3C) setose and peduncular article 4 as long as article 5; flagellum 6-segmented.

Left mandible (Fig. 4A) with incisor bearing 6 teeth; lacinia mobilis with 7 teeth; spine row composed of three spines; molar with teeth along proximal margin and 1 seta; palp tri-articulate and article 2 as long as article 3. Right mandible (Fig. 4B) with incisor bearing 8 teeth, lacinia mobilis with 4 teeth, and spine row composed of 1 spine. Inner plate of maxilla 1 (Fig. 4D) small, with 1 plumose seta on apex; outer plate with 7 bifid spines on apex; palp bi-articulate, with 7 spines on apex and 6 setae on subapical surface of article 2. Inner plate of maxilliped (Fig. 4E) with 3 spines along inner margin distally; outer plate with 4 slender spines on subapical margin and 8 strong spines along inner margin distally; palp four-articulate and nail of article 4 about 43% as long as article 4.

Gnathopod 1 (Fig. 3D) subchelate; article 5 with lobe on ventral margin; article 6 longer than broad; palm oblique, slightly expanded proximally, without spines; dactyl with inner margin minutely serrated, with 1 spinule on inner-distal margin. Gnathopod 2 (Fig. 3E) carpocheate; article 5 enlarged, longer than broad, and palmar margin with 1 large tooth on ventro-distal corner and 1 smaller tooth on middle part; article 6 curved, almost as long as article 5, with 1 small teeth near base, and about 2.5 times as long as broad; dactyl long and thin, 0.5 times as long as article 6.

In pereopods 3 and 4 (Figs. 3F, 4F), article 2 large, about 1.4 times as long as broad; article 6 about 1.8 times as long as broad. Coxa of pereopod 5 (Fig. 4G) long, anterior margin long, with 8 setae on ventral margin anteriorly, and posterior part of coxa concave and narrow and posterior margin short; article 2 as long as broad; dorsal lobes of article 4 with 3 setae, and ventral lobes with 3 setae and 4 long setae on distal margin; dactyl short and broad, tri-uncinate. Pereopods 6,7 (Fig. 4H, I) longer than pereopod 3; dactyl tri-uncinate.

Urosomites separate. Uropod 1 (Fig. 4J) biramous, peduncle about 3.9 times as long as broad; outer ramus about 65% as long as peduncle; inner ramus about 54% as long as outer one, each ramus with 1 spine on distal margin. Uropod 2 uniramous, reaching to proximal 1/5 of inner ramus of uropod 1; ramus about 19% as long as peduncle, with 1 spine and 1 or 2 setae on distal margin. Uropod 3 uniramous, peduncle very stout, about 1.6 times as long as broad; ramus small, bi-uncinate.

Telson broader than long, cleft to about 75% of its length, and with 2 rows of 7 or 8 recurved spines on each lobe, and one small plumose seta on innerdistal margin of each lobe.

Habitat: In tubes on sea weeds or on muddy flats.

Type Locality: Yangmatao, near Chefoo, on the north coast of Shantung Peninsula.

Distribution: Korea, China, and Japan.

Family Phliantidae Stebbing, 1899

Genus *Pereionotus* Bate and Westwood, 1863

3. *Pereionotus holmesi* (Gurjanova, 1938)

(Figs. 5, 6)

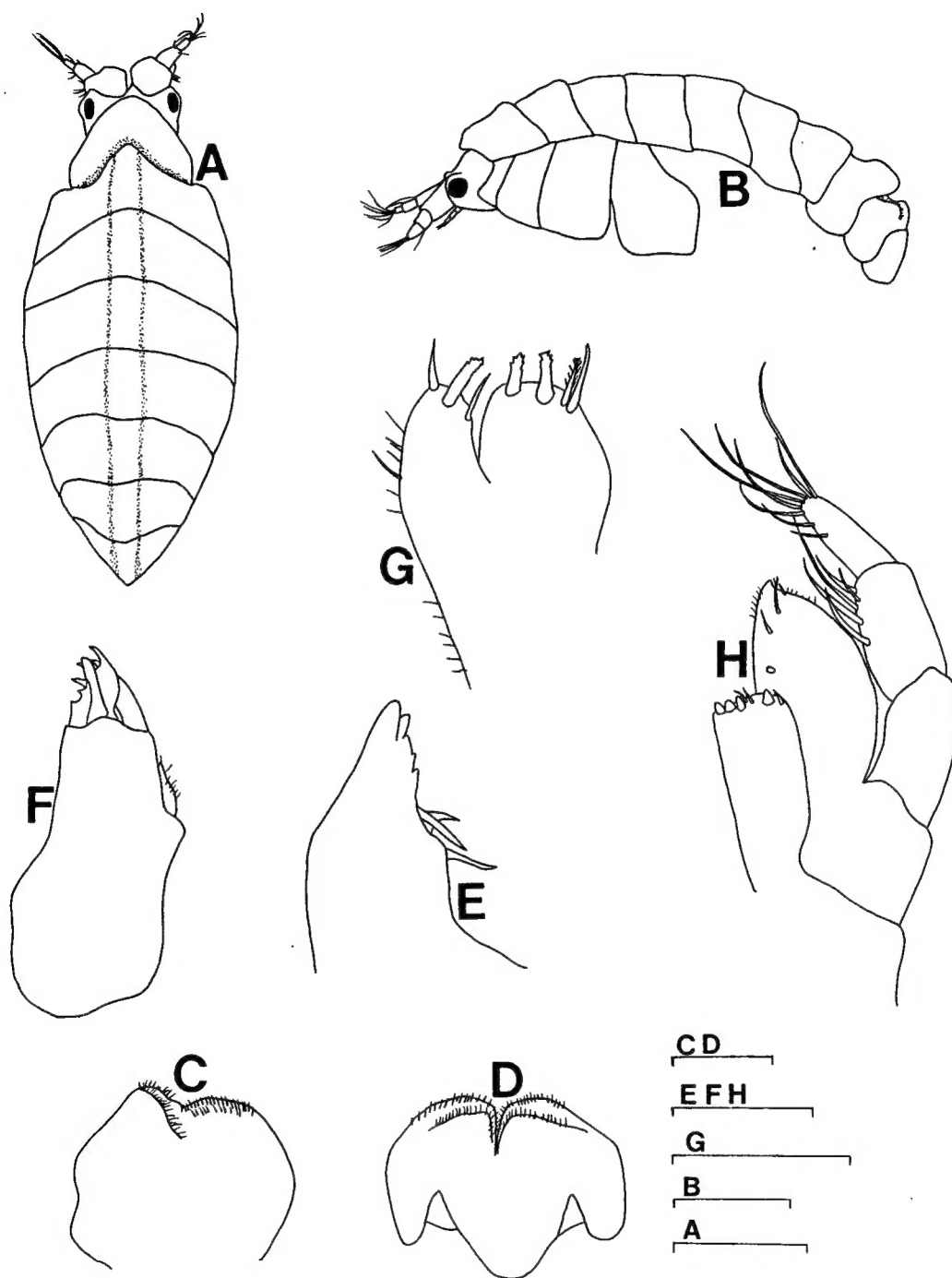


Fig. 5. *Palinnotus holmesi* Gurjanova. Ovigerous female (body length: 7mm). A, dorsal view of whole body; B, lateral view of whole body; C, upper lip; D, lower lip; E, distal part of left mandible; F, right maxilla 1 (inner plate was broken); G, left maxilla 2; H, right maxilliped. Scale bars: A, B = 1mm; C-H = 0.1mm.

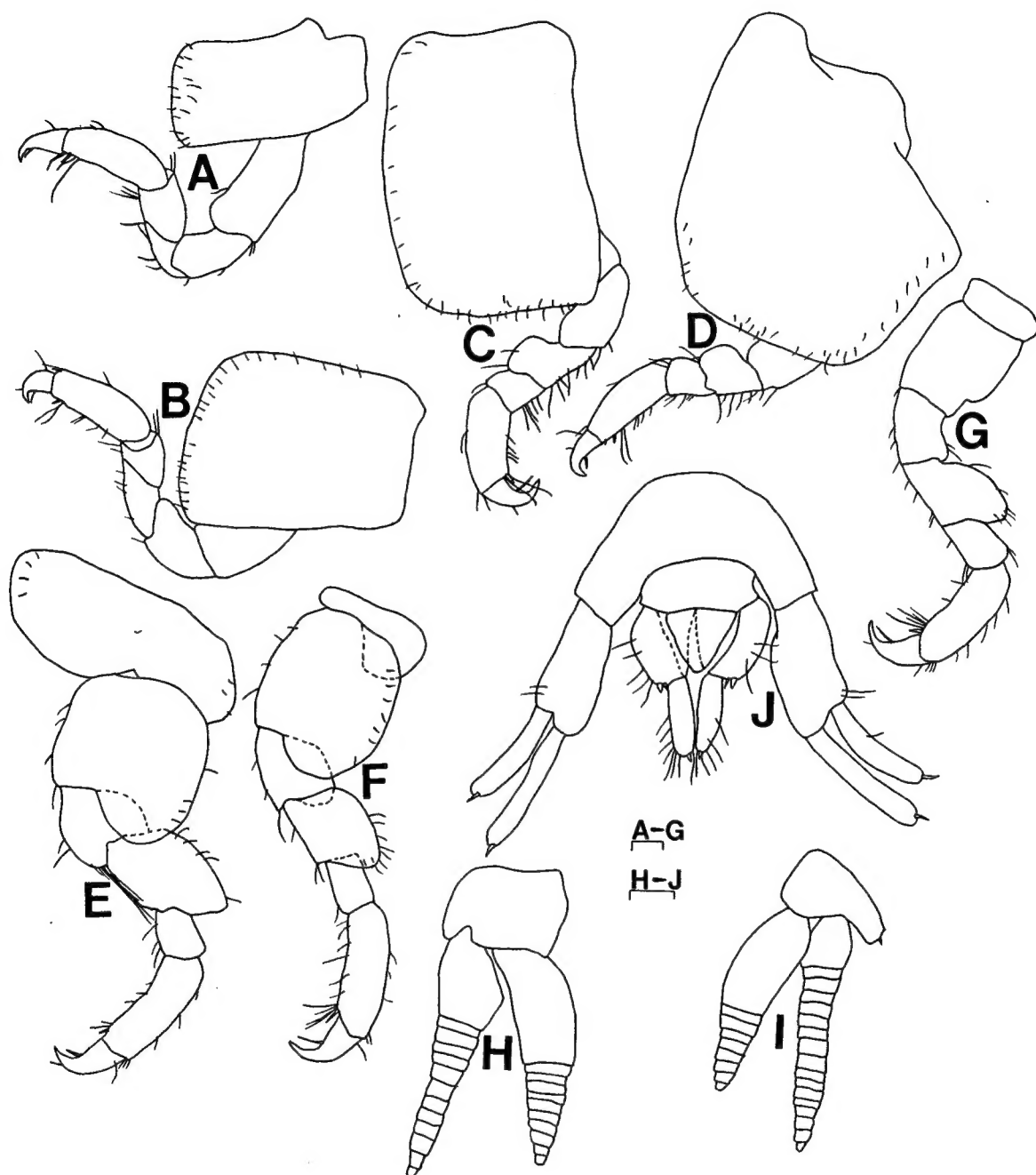


Fig. 6. *Palinnotus holmesi* Gurjanova. Ovigerous female (body length: 7mm). A, left gnathopod 1; B, left gnathopod 2; C, left pereopod 3; D, left pereopod 4; E, left pereopod 5; F, left pereopod 6; G, left pereopod 7; H, left pleopod 1 (plumose setae attached on rami were excluded); I, left pleopod 3 (plumose setae attached on rami were excluded); J, dorsal view of urosomites, uropods, and telson. Scale bars = 0.1mm.

Palinnotus holmesi Gurjanova, 1938(pp. 296, 297, 299, fig. 19, 19a) ; 1951(pp. 490, 491, 493, figs. 321A,B).

Pereionotus holmesi: Barnard and Karaman, 1991(p. 587).

Material examined: 4♀♀, Kyōkp'o, June 11, 1975(H.S.Kim).

Description of ovigerous female: Head (Fig. 5A, B) with rostrum triangular in shape; rostrum produced, as long as both eye lobes; eye circular and black; eye lobe bulged. Antennae small. Peduncular article 1 of antenna 1 broad; flagellum 1-segmented, rudimentary and with long setae on distal tip. Antenna 2 very small, flagellum 2-segmented.

Upper lip (Fig. 5C) slightly bilobed on anterior margin and pubescent. Incisor of left mandible (Fig. 5E) armed with 5 teeth; with 3 spines on inner-distal margin. Outer lobe of lower lip (Fig. 5D) broadly round, pubescent; mandibular process moderate in size. Outer lobe of maxilla 1 (Fig. 5F) with 5 serrate spines on apex; palp small, one-articulate, pubescent. Inner plate of maxilla 2 (Fig. 5G) broader than outer one, apices of both plates with serrate spines and setae. Inner plate of maxilliped (Fig. 5H) with truncate apex, apex with 4 teeth; outer plate reaching to distal end of article 2 of palp; palp tri-articulate, slender.

Pereonites 1-7 without any tubercles on dorsal margin distally; pereonite 1 rather produced anteriorly. Coxae 1-4 broad, splayed, and distal margins lined with setae.

Gnathopods 1 and 2 (Fig. 6A, B) slender, article 3 elongated. Pereopods 3 and 4 (Fig. 6C, D) generally similar to gnathopods 1 and 2. Article 2 of pereopods 5 and 6 (Fig. 6E, F) broad, articles 3,4 expanded broadly. Articles 2 and 3 of pereopod 7 (Fig. 6G) rather slender; article 4 expanded.

Peduncles of pleopods 1 and 2 (Fig. 6H) without spines. Peduncle of pleopod 3 (Fig. 6I) with 1 spine on inner margin; rami elongated, inner ramus longer than outer one.

Uropod 1 (Fig. 6J) biramous, inner ramus longer than outer one; each apex of rami with 1 spine. Uropod 2 uniramous, reaching to distal margin of peduncle of uropod 1; peduncle almost as long as ramus, with 2 spines on distal margin; ramus one-articulate, triangular in shape, and covered by telson. Telson triangular in shape, entire and with round apex.

Habitat: Among *Sargassum confusum* (see Gurjanova, 1938).

Type Locality: Petrov Island.

Distribution: Korea, Pacific coast of Russian Republic.

ABSTRACT

Three species of gammaridean amphipod, *Atylus collingi* (Gurjanova), *Cerapus longirostris* Shen, and *Pereionotus holmesi* (Gurjanova) are described from coastal regions of Korea. All three species are newly reported from Korean waters.

REFERENCES

- Barnard, J. L., 1958. Index to the families, genera, and species of the gammaridean Amphipoda (Crustacea). Allan Hancock Found. Publ., Occ. Pap., **19**: 1-145.
- Barnard, J. L., 1962. Benthic marine Amphipoda of southern California: Families Aoridae, Photidae, Ischyroceridae, Corophiidae, Podocoridae. Pacific Nat., **3**: 1-72.

- Barnard, J. L. and G. S. Karaman, 1991. The families and genera of marine gammaridean Amphipoda (except marine gammaroids). Rec. Aust. Mus., Supplement **13**: 1-866.
- Gurjanova, E., 1938. Amphipoda, Gammaroidea of Siaukhu Bay and Sudzukhe Bay (Japan Sea). Rep. Japan Sea Hydrobiol. Exped. of Zool. Inst. of the Acad. Sci. USSR, 1934, **1**: 241-404 (In Russian with English summary).
- Gurjanova, E., 1951. Bokoplavy morej SSSR i sopredel'nykh vod (Amphipoda-Gammaridea). Opred. po Faune SSSR, Akad. Nauk SSSR, **41**: 1-1029 (In Russian).
- Kim, H. S. and C. B. Kim, 1988. Marine gammaridean Amphipoda (Crustacea) of the family Ampithoidae from Korea. Korean J. Syst. Zool. Special Issue No. **2**: 107-134.
- Morino, H., 1976. On two forms of *Cerapus tubularis* a tube dwelling Amphipoda from shallow waters of Japan. Publ. Seto Mar. Biol. Lab., **23**: 179-189.
- Shen, C. J., 1936. Description of a new tube-dwelling amphipod collected on the coast of Shantung Peninsula. Bull. Fan. Mem. Inst. Biol., **6**: 265-273.

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